

The Environmental Effects of Wildfire

By James P. Jeter, BMP Coordinator/Hardwood Specialist, Alabama Forestry Commission

Photo by Bruce Springer



Natural resource managers may or may not agree on the positive impacts of using prescribed fire in the south; however, one thing is an absolute . . . a correctly conducted prescribed burn is much better on the environment than an out-of-control wildfire. Water quality, as well as all the other environmental factors, can and will be impacted by wildfire. The following is a brief discussion of how uncontrolled wildfire can affect our environment.

Vegetation: Fire may injure or kill part of a plant or the entire plant, depending on how intensely the fire burns and how long the plant is exposed to high temperatures. This is a complex issue for a brief discussion. However, if you kill or damage the plants on a given area, you are exposing the soil to the various elements such as heating from the sun, lack of filtration of storm water runoff, lack of soil stability, and increased water flow in a rain event.

Soil: Under extreme heat from uncontrolled wildfire, the structure of the mineral soil may be changed. Temperatures may be elevated long enough to ignite organic matter in the

soil as well as alter the structure of soil clays. In some sandy soils, intense heat can cause a glass-like glaze to form a top crust causing all types of nutrient and runoff loss.

Water: The main effect of uncontrolled wildfire on the water resource is the potential for increased runoff of rainfall. When surface runoff increases after a fire, it may carry suspended soil particles, dissolved inorganic nutrients, and other materials into adjacent streams and lakes, reducing water quality.

Air: There is a lot of discussion on this topic and it is also very complex, but the bottom line is the lack of visibility. Studies are still being conducted on the amounts and types of particulates that are produced from wildfire and the damage they can cause. Decreasing the size of uncontrolled wildfires can put an end to these concerns. Wildfires are “out of control” from a smoke management viewpoint, in contrast to controlled burns that are planned to minimize smoke and particulate dispersal.

Human Health and Welfare: All one has to do is turn on the television to see the effects that wildfire can cause in any community. Catastrophic events

can and do happen in the South (Georgia and Florida for example) just as they do out West. Every year, homes, vehicles, outbuildings, crops, and hay bales are destroyed by wildfires, and occasionally human lives are lost. Wildfires can also destroy entire stands of timber, eliminating the life savings of some landowners, and resulting in added expenses of clearing and replanting timber.

Wildlife: All wildlife species need four components to survive and thrive: food, water, cover, and space. Wildfire can destroy the food, water, and cover aspects for most species, creating spaces where they cannot thrive and grow. Larger species may be pushed away from fires, while smaller animals cannot escape certain death from the flames and intense heat.

Aesthetics: Wildfire in most cases is ugly, plain and simple. Who wants to live in an ugly environment? In cases of extreme heat and burnout conditions, a site may not appear to heal for many years, and the plant and animal component will be changed to accommodate the new environment. (Source: *A Guide for Prescribed Fire in Southern Forests*)

This is a simplistic approach in the discussion of the effects of uncontrolled wildfire. It is the mission of the Alabama Forestry Commission (AFC) to lessen the impacts from wildfire on our society by implementing various systems throughout the state. We have a very active fire control program, as well as a prescribed burning program. The more forests that we burn under controlled conditions, the less damage wildfires can create under uncontrolled conditions. We have instituted cooperation with programs such as Alabama’s Clean Water Partnership, Your Town Alabama, Conserving Open Spaces, Green Infrastructure, and our own Wildland Urban Interface program. More information can be obtained from your county AFC office or by visiting our website: www.forestry.alabama.gov. 🌲